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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/535,015	03/24/2000	Shunpei Yamazaki	0756-2131	3052

7590

10/23/2002

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EXAMINER

CRANE, SARA W

ART UNIT

PAPER NUMBER

2811

DATE MAILED: 10/23/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/535,015

Applicant(s)

YAMAZAKI ET AL.

Examiner

Sara W. Crane

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 22 July 2002.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 2-43 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 2-43 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☒ Certified copies of the priority documents have been received in Application No. 08/784,294.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2, 5, 6.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

**DETAILED ACTION**

***Election/Restrictions***

In view of the response of 22 July 2002, the requirement for election of species of 18 June 2002 is withdrawn.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 2 and 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamazaki et al., 5,210,050 in view of Zimmer, 4,140,548, and Zhang et al., 5,488,000.

The '050 patent teaches in figure 1(E) a device having semiconductor film 13, formed over substrate 11 which has insulating surface 12, and which has channel region 17. Gate insulator 15 is under gate electrode 16. Zimmer teaches in the abstract and cover figures to include a double layer gate insulator, with one layer of thermal oxide and one layer of deposited oxide. It would have been obvious to include such a double layer oxide in the device of the '050 patent, to form a highly coherent, defect-free gate oxide as taught by Zimmer. The '050 device has hydrogen and oxygen concentrations in the semiconductor which overlap the concentrations required by claim 2. (See the sentence spanning columns 1 and 2, and column 2, lines 26-28.) It is not clear what structure would be required by the function specified in the preamble, but

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Zhang et al. teaches at column 1, to use TFTs in display devices, an obvious use for the '050 device as well, in order to impart the advantages of the '050 device to the display TFTs.

With respect to claim 4, Zhang et al. teaches at column 4, lines 4-23, to add nickel at the concentration recited to promote crystallization. It would have been obvious to include nickel in the '050 device for the same reason.

Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over the references as applied to claims 2 and 4 above, and further in view of Fehlner et al., 5,372,860.

Column 4, lines 21-24, of Fehlner et al. teaches that a silicon layer may contain fluorine as an aid in passivation of dangling bonds. Fluorine in the silicon of the '050 device would have been obvious for this reason.

Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over the references as applied to claims 2-4 above, and further in view of Yamazaki et al., 5,365,080.

Column 5, lines 56-60, of Yamazaki, '080, teaches to add fluorine to gate insulator to prevent hot electron damage to the gate insulating film. It would have been obvious to add fluorine to the gate insulator of the '050 device for this reason.

Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over the references as applied to claims 2-5 above, and further in view of Yamazaki et al., 5,313,076.

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The abstract of the '076 reference teaches carbon and nitrogen in silicon at concentrations that overlap those claimed. It would have been obvious to include carbon and nitrogen to provide excellent mobility as noted by the '076 abstract.

Claims 7, 10, and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over the references as applied to claims 2-6 above, and further in view of Kataoka et al., 5,913,111.

Zhang et al. teaches at column 11, lines 27-29, to cover the semiconductor film and the gate electrode with oxide film 29 in order to provide form an interlayer insulator. Kataoka et al. teaches at column 5, lines 22-25, to cover the device with a passivation film that can be organic resin. These two types of insulating layers would have been obvious for interlayer insulation and for passivation, as taught.

Claims 8, 9, and 12-43 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamazaki et al., '050, Zimmer, Zhang et al., Yamazaki et al., '080, Fehner et al., Yamazaki et al., '076, and Kataoka et al.

These claims recite in various combinations each of the claim limitations discussed in the rejections of claims 2-7, 10, and 11 above. Because each limitation is taught in the prior art for the purposes and functions noted above, each of the combinations set forth would have been obvious, where the various limitations would have been obvious in combination in order to obtain the purpose or function taught in the prior art.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to S. Crane, whose telephone number is (703) 308-4894.

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The fax phone number for this Group is (703) 308-7722.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist, whose telephone number is (703) 308-0956.

A handwritten signature in cursive script, reading "Sara W. Crane".

Sara W. Crane  
Primary Examiner  
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